

New records of the Fruit Flies (Diptera: Tephritidae) in the Fauna of Iran

F. Seddighi Sadr¹ & S. Mohamadzade Namin^{2*}

¹Department of Animal Biosystematics,
Faculty of Biology,
Varamin-Pishva Branch, Islamic Azad University, Varamin, Iran.

²Department of Plant Protection,
Faculty of Agriculture,
Varamin-Pishva Branch, Islamic Azad University, Varamin, Iran.

* Corresponding author

E-mail: mohamadzade@iauvaramin.ac.ir

Seddighi Sadr, F. & Mohamadzade Namin, S. New records of the fruit flies (Diptera: Tephritidae) in the fauna of Iran. As a result of studies on fruit flies in Iran, three species (*Chaetorellia isais* Hering, 1937, *Phyllophyla caseo* (Harris, 1780), *Tephritis robusta* Korneyev, 2013), are recorded for the first time from Iran. *Centaurea behen* L. is reported as a new host plant of *Chaetorellia isais* and *Cousinia* sp. is a new host plant for *Tephritis robusta*.

Key words: Diptera, Tephritidae, fruit flies, Iran, new record.

Седдігі-Садр, Ф. та Мохамадзаде-Намін, С. Нові знахідки мух-осетниць (Diptera: Tephritidae) у фауні Ірану. У результаті вивчення мух-осетниць Ірану, три види (*Chaetorellia isais* Hering, 1937, *Phyllophyla caseo* (Harris, 1780) та *Tephritis robusta* Korneyev, 2013) наведено вперше для фауни країни. *Centaurea behen* L. наведено як нову кормову рослину *Chaetorellia isais*, а *Cousinia* sp. — уперше як кормову рослину *Tephritis robusta*.

Key words: Diptera, Tephritidae, мухи-осетниці, Іран, нові знахідки.

Седдиги-Садр, Ф. и Мохамадзаде-Намин, С. Новые находки мух-пестрокрылок (Diptera: Tephritidae) в фауне Ирана. В результате исследования мух-пестрокрылок Ирана, три вида (*Chaetorellia isais* Hering, 1937, *Phyllophyla caseo* (Harris, 1780) и *Tephritis robusta* Korneyev, 2013) отмечены впервые для фауны страны. *Centaurea behen* L. приведена как новое кормовое растение *Chaetorellia isais*, а *Cousinia* sp. — впервые как кормовое растение *Tephritis robusta*.

Ключевые слова: Diptera, Tephritidae, мухи-пестрокрылки, Иран, новые находки.

Introduction

The family Tephritidae is one of the most economically important families of acalyptate Diptera. They are almost all phytophagous. Some species cause economical damage to agricultural crops and some of them effectively used in biological control programs against weeds. Larvae develop in fruits and flowers of Asteraceae plants, in galls on stems and roots and mine leaves (White & Elson-Harris, 1992).

Iran is a large country covering an area of 1.623.779 km² (Zehzad *et al.*, 2002). It has a spectacular position

between the Palaearctic, Afrotropical and Oriental zoogeographic regions. In the last five years studies on Tephritidae fauna of Iran more than 50 new records and 13 new species of Tephritidae described from Iran by different authors (see Mohamadzade Namin, Nozari & Rasoulzadeh, 2010; Mohamadzade Namin & Nozari, 2011; Mohamadzade Namin & Nozari, 2015 for references), but still has not been completely studied.

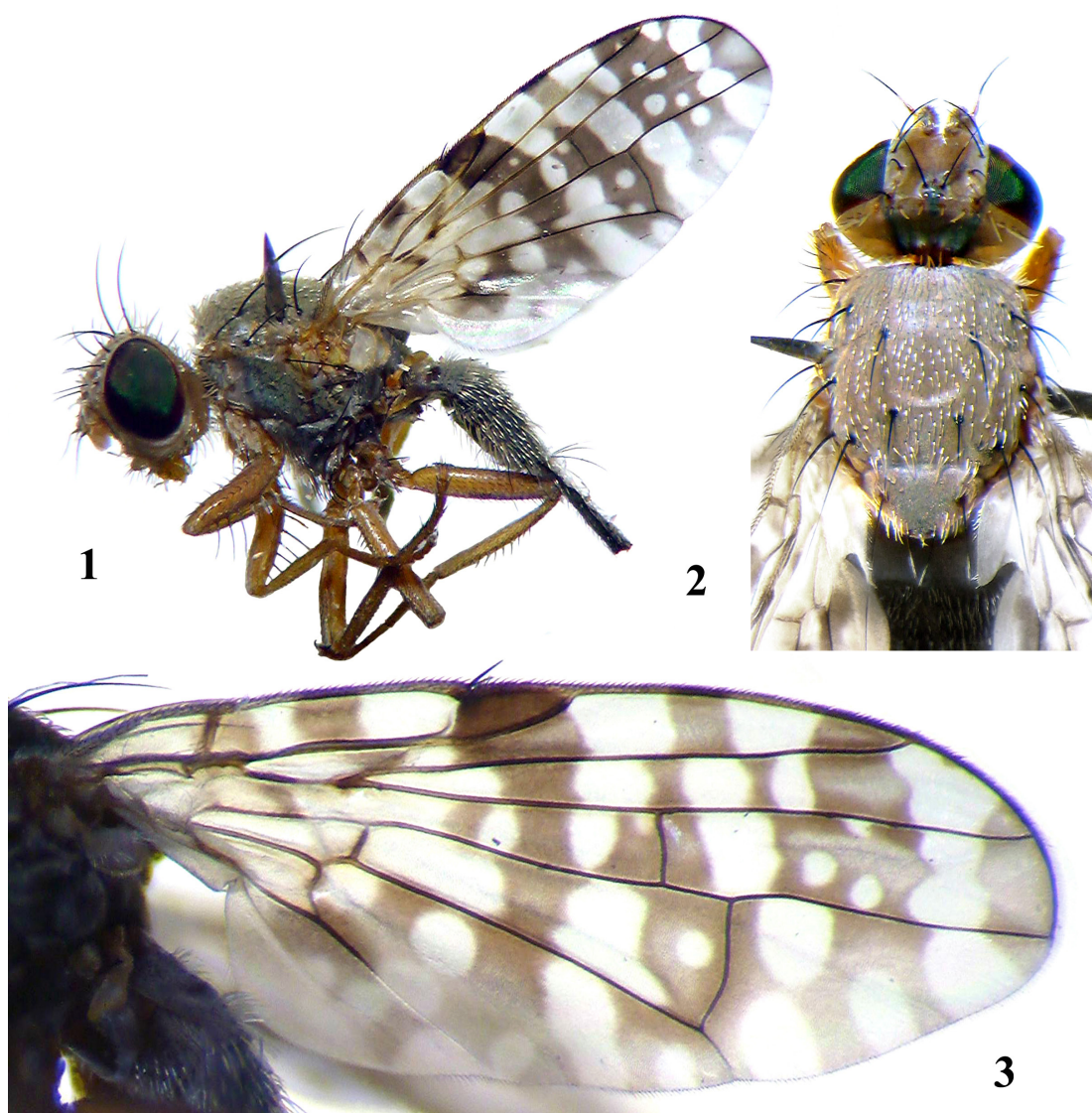
Material and methods

Material was collected by a standard sweeping net or reared from flower heads of asteraceous plants and minuten pinned on side. All the specimens are deposited in second author's personal collection. Species were identified by means of the keys by Hendel (1927), Rikhter (1988), White & Marquardt (1989) and Merz (1994).

Results

During studies on fruit fly fauna in Iran, three species were collected for the first time for Iran. *Centaurea behen* is reported as a new host plant of *Chaetorellia isais* and *Cousinia* sp. is a new host plant for *Tephritis robusta*.

Detailed morphological descriptions are not given. For further information, refer to the works by Hendel (1927), Rikhter (1988), White & Marquardt (1989) and Merz (1994).



Figs. 1–3. *Tephritis robusta* Korneyev. 1– total view, left; 2– mesonotum; 3– wing.

Subfamily Tephritinae**Tribe Tephritini*****Tephritis robusta* Korneyev, 2013 (Figs. 1–3)**

Korneyev, 2013.

Material examined: Ardebil Province, Sarein, Vargehsaran valley, 38°12'N, 47°54'E, 2950m, 05. VII. 2014, 12♂, 4♀; 20km E Namin, 38°26'N, 48°33'E, 1500 m, reared from flower heads of *Cousinia* sp., date of collecting: 01. VIII. 2013, date of exit: 04. VIII. 2013 2♂, 3♀; same collection data, reared from flower heads of *Cousinia* sp., date of collecting: 06. VII. 2014, date of exit: 01–05. VIII. 2014, 7♂, 2♀; (Mohamadzade Namin leg.); Gilan Province: Astara, Heyran pass, 38°26'N, 48°34'E, 1480 m, 13. VI. 2015, 1♂, 2♀ (Seddighi Sadr leg.).

Host plant: *Cousinia* sp. (new record).

Distribution: Azerbaijan (Korneyev, 2013), Iran (new record).

Diagnosis: *Tephritis robusta* is a moderately large species, with dark brown reticulate wing pattern and wing apex with entire brown spot. It resembles *Tephritis admissa* and *T. tatarica*, differing from *T. tatarica* by the wing pattern details: *T. robusta* having only one pair of small round hyaline spots at anterior part of crossvein r-m (Fig. 3) (in *T. tatarica* surrounded by two pairs of hyaline dots fused and forming long spots). The aculeus in *T. robusta* is shorter and wider than *T. tatarica*. The aculeus of *T. admissa* is 5 times as long as wide, whereas in *T. robusta* and *T. tatarica* it is 7.8–11 times as long as wide (see Fig. 50 in Korneyev, 2013).

Tribe Terelliini***Chaetorellia isais* Hering, 1937 (Figs. 4–7)**

Hering, 1937; Foote, 1984; White & Marquardt, 1989.

Material examined: Alburz Province: Taleghan, Zidasht, 36°09'N, 50°42'E, 1900m, reared from flower heads of *Centaurea behen*, date of collecting: 07. VII. 2008, date of exit: 22. VII. 2008, 2♂, 1♀; same collection data, reared from flower heads of *Centaurea behen*, date of collecting: 09. VII. 2015, date of exit: 22–26. VII. 2008, 3♂, 6♀; Kurdistan Province: Sanandaj, Abidar mountain,

35°44'N, 46°59'E, 1900m, swept on flower heads of *Centaurea behen*, 14. VI. 2014, 2♀ (Mohamadzade Namin leg.).

Distribution. Lebanon, sw. Russia, Kazakhstan, China? (Norrbon *et al.*, 1999) and Iran (new record).

Host plant: *Chartolepis intermedia* (White and Marquardt, 1989), *Centaurea behen* (new host plant).

Diagnosis: Body yellow. Wing with 4 crossbands; discal and preapical crossbands connected in anterior margine of the wing. Cell bm with hyaline area (Fig. 4). Anterior supra-alar seta based on black spot (Fig. 5). Aculeus evntly narrowed and more than 2mm long (Figs. 6–7).

Subfamily Trypetinae**Tribe Trypetini*****Philophylla caesio* (Harris, 1780) (Figs. 8–9)**

Hendel, 1927; Merz, 1994.

Material examined: Gilan Province, Lahijan, 26. VI. 2015, 1 ♀ (Seddighi Sadr leg.).

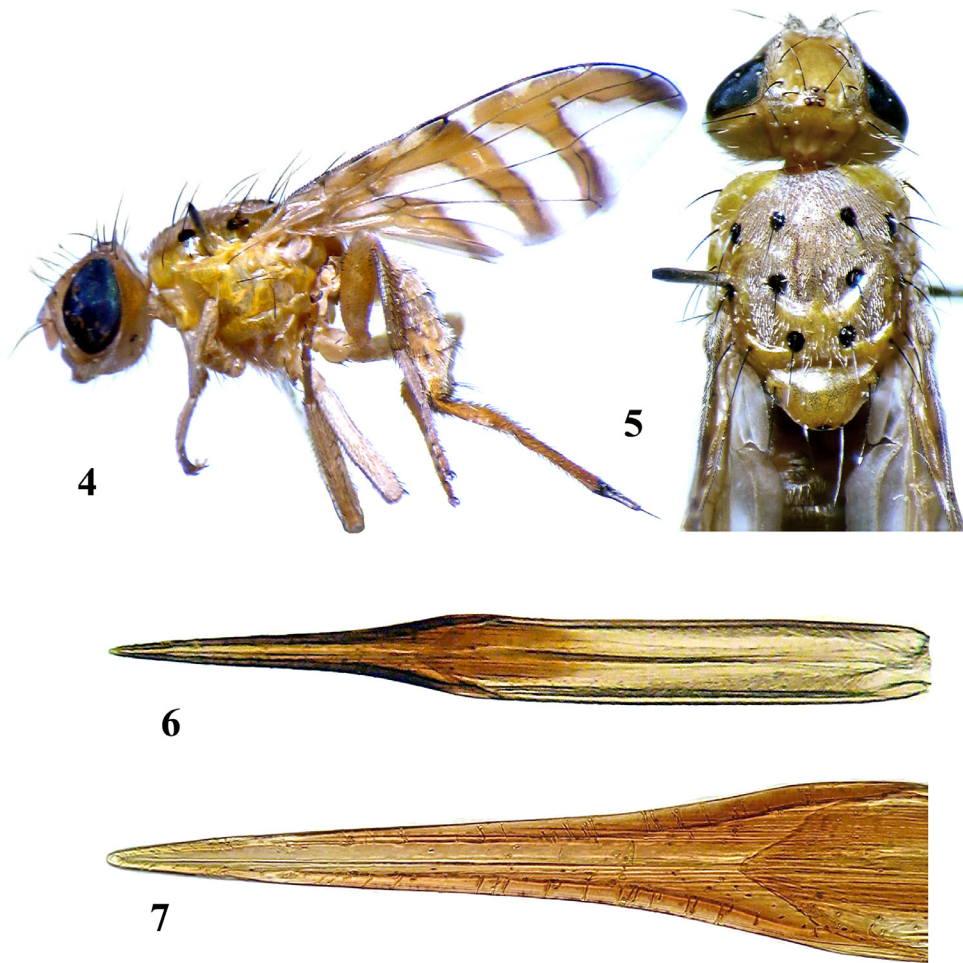
Host plant: Larvae live in the stem of *Urtica dioica* (Urticaceae) (Merz, 1994).

Distribution: Britain, Scandinavia, Poland and Russia to Ural Mountains., S to Switzerland, Ukraine & Caucasus (Merz & Korneyev, 2004; Norrbom *et al.*, 1999), Iran (new record).

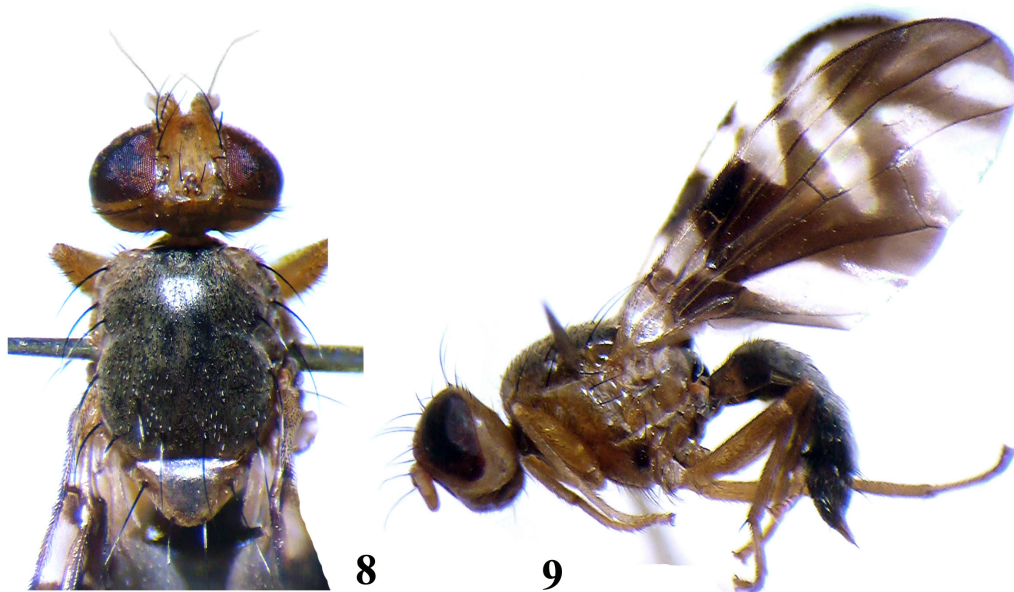
Diagnosis: Head yellowish brown, frons setulose. scutum graysh microtomentose (Fig. 8), pleura and legs yellowish brown; scutellum brown in the middle with yellow margin; abdomen shiny black. Wings with dark brown oblique bands as in Fig. 9. Pterostigma black, R₄₊₅ with setulae on upper side. R₁ meeting C before level of r-m crossvein. Arista pubescent. Ocellar setae present; one sternopleural seta present.

References

- Foote, R. H. (1984) Family Tephritidae (Trypetidae). In: Soós, Á. & Papp, L. Eds. *Catalogue of Palaearctic Diptera. Vol. 9. Micropezidae — Agromyzidae*. Akadémiai Kiadó, Budapest, 66–149.
- Freidberg, A. & Kugler, J. (1989) Diptera: Tephritidae. *Fauna Palaestina, Insecta*, 4, 1–212 + 8 plates.



Figs. 4–7. *Chaetorellia isais* Hering. 4– total view, left; 5– mesonotum; 6– aculeus; 7– aculeus tip.



Figs. 8–9. *Philophylla caesio* (Harris). 8– mesonotum; 9– total view, left.

- Gilasian, E. & Merz, B. (2008) The first report of three genera and fifteen species of Tephritidae (Diptera) from Iran. *Journal of Entomological Society of Iran*, 27, 11–14.
- Hendel, F. (1927). 49. Trypetidae. In: Lindner, E., ed. *Die Fliegen der palaearktischen Region*, Vol. 5, Stuttgart, 1–221 + 17 plates.
- Hering, E. M. (1937) Neue Bohrfiegen aus der Beckerschen Sammlung. (Dipt.) (16. Beitrag zur Kenntnis der Trypetidae). *Mitteilungen aus dem Zoologischen Museum in Berlin*, 22, 244–264.
- Koçak, A. & Kemal, M. (2013) Tephritidae in Turkey. An evaluation of its status from various standpoints (Diptera). *Cesa News*, 86, 1–49.
- Korneyev, S. V. (2013) Revision of species of the genus *Tephritis* Latreille 1804 (Diptera: Tephritidae) with entire apical spot. *Zootaxa*, 3620 (1), 67–88.
- Merz, B. & Korneyev, V. A. (2004) Fauna Europaea: Tephritidae. In: Pape T., ed. *Fauna Europaea: Diptera Cyclorrhapha. Fauna Europaea*, version 2.6. 2, <http://www.faunaeur.org>. Assigned 29.08.2013.
- Merz, B. (1994) *Diptera: Tephritidae*. Insecta Helvetica Fauna, HGE Press, Geneva, 10, 1–198.
- Mohamadzade Namin, S., Nozari, J. & Rasoulzadeh, Gh. (2010) The fruit flies (Diptera: Tephritidae) in Tehran province, with new records for Iranian fauna. *Vestnik zoologii*, 44(1), 20–31.
- Mohamadzade Namin, S. & Nozari, J. (2010) The fruit flies (Diptera: Tephritidae) in Kurdistan province, with new records for Iranian fauna. *Ukrainska Entomofaunistyka*, 2(4), 47–53.
- Mohamadzade Namin, S. & Nozari, J. (2015) Revision of the *Urophora xanthippe* species group, with description of new species (Diptera: Tephritidae). *Zootaxa*, 3990(1), 97–112.
- Norrbom, A. L., Carroll, L. E., Thompson, F. C., White, I. M. & Freidberg, A. (1999) Systematic Database of Names. In: Thompson, F. C., ed. *Fruit Fly Expert Identification System and Systematic Information Database*, Myia, 65–299.
- Rikhter, V. A. (1988) Family Tephritidae (Trypetidae) — fruit flies. In: Bei-Bienko, G. Ya., ed., *Keys to the insects of the European part of the USSR. Vol. V. Diptera, Siphonaptera. Part 2*, Leiden, New York, 212–276.
- White, I. M. & Marquardt, K. (1989) A revision of the genus *Chaetorellia* Hendel (Diptera: Tephritidae) including a new species associated with spotted knapweed, *Centaurea maculosa* Lam. (Asteraceae). *Bull. Ent. Res.*, 79, 453–487.
- White, I. M. & Elson-Harris, M. M. (1992) *Fruit Flies of Economic Significance: Their Identification and Bionomics*. CAB International and ACIAR, London, 1–601.
- Zehzad, B., Kiabi, B. H. & Madjnoonian, H. (2002) The natural areas and landscape of Iran: an overview. *Zoology in the Middle East*, 26, 7–10.